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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,510	05/11/2004	Donald R. STEVENSON	47399-0034	3509

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EXAMINER	
THEXTON, MATTHEW	

ART UNIT	PAPER NUMBER
1714	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/709,510	STEVENSON ET AL.	
	Examiner	Art Unit	
	Matthew A. Thexton	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2006 Septmeber 28*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-20* is/are pending in the application.

4a) Of the above claim(s) *1 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-7,9-14 and 16-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-7 and 9-20* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction and election are set forth in the Office action of 2005 December 29 (pages 2-5).

Applicant's election of Group II and the specie of DOVERPHOS 613 in combination with DOVERPHOS 9EH in the reply filed on 2006 September 28 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 2006 September 28.

The elected Group II now consists of claims 2-7, 9-14, and 16-20.

Applicant has amended the independent claims 10 and 16 in Group II in a manner that excludes the previously elected and examined combination. Claim 10 and 16 are limited to previously non-examined combinations of at least two phosphite esters selected from the group consisting of (1) alkyl bisphenol-A phosphites (disclosed as #3 and #4 on page 18, and indicated as "(iv)" in claim 1 and "(IV)" in claim 15) and (2) pentaerythritol phosphites (disclosed as #16 and #17 on page 20, and indicated as "(vi)" in claim 1 and as "(VI)" in claim 15). As written, the limitations of these claims with respect to the phosphite esters encompass combinations of esters entirely described by

(1), combinations of esters entirely described by (2), or combinations of esters from both (1) and (2).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claims Version

The claims listing submitted 2006 September 28 has been examined.

Claims Analysis

Claim 8 has been canceled.

Independent claim 10 is directed to vinyl resin mixtures comprising:

(a) an additive combination for use as at least partial replacement of mixed metal, alkali metal and tin based stabilizers for use in said resin which consists of:

(i) at least two phosphite esters selected from the group consisting of:

- a C_{10-15} alkyl bisphenol-A phosphite; and
- a C_{8-15} pentaerythritol phosphite; and

(ii) a zinc additive; and

(b) a halogenated resin;

wherein the molar ratio of P/Zn is about 80:1 to 4:1; and

wherein the additive composition is free of calcium, cadmium, barium and tin.

This claim encompasses component (i) being two different C_{10-15} alkyl bisphenol-A phosphites or two different C_{8-15} pentaerythritol phosphites or a mix of one or more of each. This claim is open to metal, alkali metal, and tin based stabilizers since it is only "said additive composition" that "is free of calcium, cadmium, barium and tin."

Claims 2-7, 9, and 11-14 depend directly or indirectly on claim 10 and further specify or limit: said molar ratio; the type of phosphites; the percentage weight loss in said additive in a specified test; the amount of zinc in said resin; and that (claim 14, which depends from claim 11) said resin is flexible polyvinyl chloride.

Independent claim 16 is directed to vinyl resin mixtures comprising:

(a) an additive combination for use as at least partial replacement of mixed metal, alkali metal and tin based stabilizers for use in said resin which additive consists of at least two phosphite esters wherein:

- a first phosphite ester C_{10-15} alkyl bisphenol-A phosphite defined by formula (IV); and
- at least one second phosphite ester which is selected from the group consisting of C_{10-15} alkyl bisphenol-A phosphite of formula (IV) and C_{8-15} pentaerythritol phosphite of formula (VI);

(b) a halogenated resin; and

(e) a zinc additive;

wherein the molar ratio of P/Zn is about 80:1 to 4:1; and

wherein the additive composition is free of calcium, cadmium, barium and tin.

This claim encompasses component (i) being two different C_{10-15} alkyl bisphenol-A phosphites or two different C_{8-15} pentaerythritol phosphites or a mix of one or more of each. This claim is open to metal, alkali metal, and tin based stabilizers since it is only "said additive composition" that "is free of calcium, cadmium, barium and tin."

Claims 17-20 depend directly or indirectly on claim 16 and further specify or limit: the amount of zinc in the polyvinyl chloride (sic); and that (claim 20, which depends from claim 16) said polyvinyl chloride (sic) is flexible polyvinyl chloride.

Claim Rejections - 35 USC § 112

Claims 2-7, 9-14, and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The use of component identifiers, such as (a) or (i) is employed in the claims in a way that is confusing because dependent claims, although presented in their abbreviated dependent format nonetheless have the full meaning that they encompass all the limitations of claims from which they depend. Accordingly, such identifiers in the claims being depended upon are implicitly encompassed in the dependent claims. Therefore, dependent claims should not employ identifiers already in use.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 recites the limitation "said phosphite ester" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 17-19 recite the limitation "polyvinyl chloride" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 20 recites the limitation "said polyvinyl chloride " in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 4-7 and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 4, 7, and 16 recite "and C_{1-9} alkyl substituted derivatives thereof" to modify the bisphenol based compounds and the pentaerythritol derived structures. Since the structural formula for the bisphenol based compounds shows and defines R^1, it is unclear what additional limitation is encompassed by this. Since the structural formula for the pentaerythritol derived

compounds already seem to be fully defining, it is unclear what additional limitation is encompassed or even possible for this recitation. Further, in claims 4 and 16, the pentaerythritol phosphite is said to be C_{8-15}, but R^4 is said to be C_{1-9} which is not understood since it was thought that the R^4 corresponds to the moiety C_{8-15}.

Claim Rejections

Claims 2-7, 9-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nosu et al. (JP 3-157437A, USPTO obtained translation).

The present claims are broadly discussed hereinabove in the section ***Claims Analysis*** which is incorporated by reference.

The reference '437 (translation) discloses halogen containing resin such as vinyl chloride polymer (penultimate line of page 7) stabilized by 0.01-5 phr zinc compound such as zinc stearate (last two lines of page 10) in combination with 0.01-5 phr phosphite compounds such as DOVERPHOS 613 (third and fourth to last lines of page 14) or DOVERPHOS 1220 (line 19 of page 14) and impliedly free of Ca, Cd, Pb, Ba, and Sn (claims, and lines 8-15 of page 4). Given the molecular weights of the claimed phosphite esters (assuming 1:1 mixture of 613:1220) and zinc stearate, converting from P-compound/Zinc-compound weight ratio to P/Zn mole ratio involves multiplying by approximately 1.8. Since the range of amounts by weight in '437 is 0.01-5 for each noted component, it is clear that the mole ratio of Applicant's claims (anywhere from 80:1 to 4:1) encompasses the weight suggestions of '437. Further, a dose of 0.01 phr is

equal to 100 ppm, thus it is clear that the limitations of zinc dosage in claims 11-14 and 17-19 encompass those of '437.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed mixtures of phosphite esters given the suggestion that they are effective for the same use. Applicant's presented specie DOVERPHOS 1220 is a structurally identical to the listed species in '437, as well as being encompassed by the broad disclosure of formula (3) (page 13). By following the suggestions of '437, the presently claimed subject matter is arrived at. The limitation that the resin be "flexible" in claims 14 and 20 is of no moment since it is a relative term not defined by the present specification and because '437 discloses vinyl chloride polymer which is inherently flexible. Applicant's examples have been considered, example D employs subject matter encompassed by the claims, but it fails to provide sufficient data to conclude that a greater than additive effect is in evidence.

Claims 2-7, 9-14 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valdiserri (US 4614756) alone or in view of York (US 4116926).

The present claims are broadly discussed hereinabove in the section ***Claims Analysis*** which is incorporated by reference.

Reference '756 discloses PVC stabilized with zinc salt of fatty acid, conventional phosphite ester or esters (column 2, lines 27-28), and reduced amounts of dioctyl tin mercaptide (column 1, lines 49-55). Examples 16-18 and 19 of '756 employ about 14.7 and 29.4 molar ratio of P/Zn respectively based on a bisphenol A-alkyl phosphite having

a molecular weight of 1028 for each 'monomer' of the oligomer '439' (i.e., assuming the '439' has four C12 alkyl groups) and having two Phosphorus atoms, and zinc stearate having a molecular weight of 631.4 with one zinc atom. The reference employs stabilizer '439' bisphenol A-alkyl phosphite oligomer. While not identical to Applicant's DOVERPHOS ® 613 or 675, it is suggestive of the mere monomer and would have been an obvious variant to one of ordinary skill in the art at the time of the invention since they are chemically analogous and the monomeric forms were commercially available, as well as being encompassed by the broad disclosure (column 2, lines 10-31). Examples 10-15 of '756 employ pentaerythritol derived phosphites, structural analogs to Applicant's presented species 1220 and 9708. Applicant's presented specie DOVERPHOS 1220 and 9708 are structurally obvious variants of the listed species in '756, as well as being encompassed by the broad disclosure (column 2, lines 10-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to have employed mixtures of phosphite esters given the suggestion that they are effective for the same use and the suggestion to employ mixtures (column 2, lines 27-28).

The tin containing additive required by the reference disclosure is not excluded by Applicant's claim limitation of "free of...tin" because this phrase applies only to the additive component recited per se, not to the resin mixture which "comprises" other components. Further, the specification and claims otherwise admit that the explicit additive combinations are only "at least a partial replacement for ... tin-based stabilizer additives" and there is no evidence that premixing the additives of claim 1 and 15 and separately adding the tin-based additive to the resin would result in a resin product

(claims 2-7, 9-14, and 16-20) that could be distinguished from a product formed from any other order or combinations of addition to the resin.

The reference disclosure of example 16-18 demonstrates that increasing amounts of zinc stearate up to the test limit provides increasing stabilization. Further, comparative examples C-G demonstrate that zinc is preferred to calcium or magnesium.

The '756 reference discusses the tin stabilizers at column 1, lines 12-47. It is understood that their relative expense is a motivating factor in identifying and employing lower cost materials or enhancers. Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the invention to have omitted the tin stabilizers in the additive formulations so as to permit the commercial user the option to capitalize on any identified lower cost materials or enhancers up to the time of addition to PVC.

The limitation that the resin be "flexible" in claims 14 and 20 is of no moment since it is a relative term not defined by the present specification and because '437 discloses vinyl chloride polymer which is inherently flexible. Applicant's examples have been considered but they fail to provide sufficient data to conclude that a greater than additive effect is in evidence.

'926 discloses two classes of phosphite esters known to be stabilizers for vinyl chloride polymers. The polyalkyl bis-phenol-A polyphosphates may contain from 1-5 bis-phenol-A groups, indicating that monomers and oligomers are to be considered obvious structural variants. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify '756 to employ the phosphites of '926 because of their chemical similarity and the suggestion in '926 that they are equivalents.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 571-272-1125. The examiner can normally be reached on Tuesday-Friday, 9:30 to 7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S. Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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